WHAT IS CLAIMED IS:

1. A method for the reception of a signal modulated according to a multi-level coding technique, comprising at least two coding levels (MSB, ISB, LSB) each having a distinct noise robustness,

said signal comprising a plurality of symbols (S_r) each comprising at least one bit, assigned to one of said coding levels,

said method comprising at least one iteration of decoding comprising successive steps of decoding (514, 515, 516, 524, 525, 526) each of said bits received, at least one of said decoding steps taking account of the result of said at least one preceding step of decoding if any,

characterized in that said bits ($\tilde{b}_3^i$, $\tilde{b}_2^i$, $\tilde{b}_1^i$) are decoded in a predetermined order taking account of the robustness of said levels, the bit or the bits assigned to the coding level that have the greatest noise robustness, called the most robust level, being decoded first,

and in that said method comprises at least two successive iterations of decoding (51, 52).

2. Method of reception according to claim 1, characterized in that said predetermined order corresponds to the decreasing order of the robustness of the coding levels (MSB, ISB, LSB) to which said received bits are assigned.

3. Method of reception according to either of the claims 1 and 2, characterized in that each of said successive decoding steps takes account of the result of said preceding decoding step or steps so as to improve the result of said steps for the decoding of said bits assigned to the less robust levels.

4. Method of reception according to any of the claims 1 to 3, characterized in that said bits assigned to said most robust level are the most significant bits of said corresponding symbol.

5. Method of reception according to any of the claims 1 to 4, characterized in that within one of said iterations of decoding (51, 52), each of said successive steps for the decoding of said received bits is preceded by a corresponding demodulation step (511, 512, 513, 521, 522, 523).

6. Method of reception according to any of the claims 1 to 5, characterized in that a step for decoding the bits of a given level takes account, during the n^{th} decoding iteration, where $n \geq 2$, of the result of at least certain of said steps of decoding of said received bits assigned to the coding levels less robust than said given level, and implemented during at least one of said preceding iterations.

7. Method of reception according to any of the claims 1 to 6, characterized in that it comprises two successive decoding iterations (51, 52).

8. Method of reception according to any of the claims 6 and 7 characterized in that, at the end of at least certain of said iterations, it implements a step (520) for the estimation of a sent symbol S_e, and a step for the computation of an extrinsic piece of information ($\alpha(S_r-S_e)$)) taking account of said estimated sent symbol, said extrinsic piece of information enabling an improvement in the result of said steps for the decoding of said following iteration or iterations.

9. Method of reception according to claim 8, characterized in that said piece of extrinsic information has the form $\alpha(S_r-S_e)$, where $\alpha \in [0, 1]$, S_r is said received symbol and S_e is said estimated sent symbol.

10. Method of reception according to claim 9, characterized in that α is substantially equal to 0.25.

11. Method of reception according to claim 9, characterized in that it comprises a step of optimization of the value of α as a function of the signal-to-noise ratio.

12. Method of reception according to any of the claims 1 to 11, characterized in that it further comprises a step for determining a signal-to-noise ratio from at least one piece of reference information sent, called pilot information, the value of which is known *a priori* in reception.

13. Method of reception according to any of the claims 5 to 12 characterized in that it furthermore comprises, for at least certain of said coding levels, an additional de-interleaving step implemented between the said steps of demodulation and decoding of said received bits.

14. Method for the decoding of a signal modulated according to a multi-level coding technique, comprising at least two coding levels (MSB, ISB, LSB), each having a distinct noise robustness,

said signal comprising a plurality of symbols each comprising at least one bit, assigned to one of said coding levels,

said method comprising at least one iteration of decoding (51, 52) comprising successive steps (514, 515, 516, 524, 525, 526) of decoding each of said bits received, at least one of said decoding steps taking account of the result of said at least one preceding step of decoding if any,

characterized in that said bits ($\tilde{b}_3^i$, $\tilde{b}_2^i$, $\tilde{b}_1^i$) are decoded in a predetermined order taking account of the robustness of said levels, the bit or the bits assigned to the coding level that have the greatest noise robustness, called the most robust level, being decoded first,

and in that said method comprises at least two successive decoding iterations (51, 52).

15. Device for the reception of a signal modulated according to a multi-level coding technique, comprising at least two coding levels (MSB, ISB, LSB) each having a distinct noise robustness,

said signal comprising a plurality of symbols each comprising at least one bit, assigned to one of said coding levels,

said device comprising decoding means (514, 515, 516, 524, 525, 526) implementing a successive decoding of each of said bits ($\tilde{b}_3^i$, $\tilde{b}_2^i$, $\tilde{b}_1^i$) received, the decoding of at least one of said bits received taking account of the result of said at least one preceding decoding operation if any,

characterized in that said decoding means decode said bits in a predetermined order taking account of the robustness of said levels, the bit or the bits assigned to the coding level that have the greatest noise robustness, called the most robust level, being decoded first,

and in that said decoding means achieve at least two successive decoding iterations (51, 52).

16. System for the coding/decoding of a signal comprising a plurality of symbols each comprising at least one bit,

characterized in that it comprises at least one coding device enabling the modulation of said signal according to a multi-level coding technique, comprising at least two coding levels (MSB, ISB, LSB) each having a distinct noise robustness, each of said bits being assigned to one of said coding levels,

and at least one decoding device comprising decoding means (514, 515, 516, 524, 525, 526) implementing a successive decoding of each of said received bits, the decoding of at least one of said received bits taking account of the result of at least one previous decoding if any,

said decoding means decoding said bits in a predetermined order taking account of the robustness of said levels, the bit or bits assigned to the coding level that show the greatest noise robustness, called the most robust level, being decoded first,

said decoding means performing at least two successive decoding iterations (51, 52).

17. Application to at least one of the following fields:

- digital radio transmission, especially of the DRM ("Digital Radio Mondiale") type;
- error corrector codes;
- digital signal processing;
- digital communications;
- the recording/playback of a digital signal,

of a method of reception of a signal modulated according to a multi-level coding technique, comprising at least two coding levels (MSB, ISB, LSB) each having a distinct noise robustness, said signal comprising a plurality of symbols (S_r) each comprising at least one bit assigned to one of said coding levels, said method comprising at least one iteration of decoding comprising successive steps of decoding each of said bits received, at least one of said decoding steps taking account of the result of said at least one possible preceding step of decoding, said

reception method being such that said bits are decoded in a predetermined order taking account of the robustness of said levels, the bit or the bits assigned to the coding level that have the greatest noise robustness, called the most robust level, being decoded first, said reception method comprising at least two successive iterations of decoding (51, 52).